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NRO REVIEW COMPLETED



## PROJECT CORONA CONCEPT OF OPERATIONS

FY 64 - 65

1. The CORONA Program provides aerial reconnaissance in support of national objectives. The system used for this reconnaissance employs a two stage earth-circling satellite vehicle, the first stage being a THOR boost, with or without thrust augmentation, and the second stage a Lockheed AGENA engine. There are three camera systems available in the program. The MURAL system with a single recovery capability. When a dual recovery capability is used, the system is identified as the "J" system. Both of these use the same type cameras. A more complicated camera system is used with a single recovery system and is referred to as the LANYARD system. The camera system used to obtain photographic material for use in improving the nation's geodesy capability is called ARGON.

2. Successful recoveries of MURAL payloads during the past year confirm the important contribution this system has made to the nation's intelligence posture. Material obtained through this system is the nation's only source of obtaining photographic coverage of the USSR. The MURAL system has made an immeasurable contribution to the nation's security and it should be retained in the inventory until such time as other systems attain a degree of reliability high enough to declare them operational.

3. As the LANYARD and "J" systems transform from their present Research and Development state to fully operational systems, several additions to the systems and their support elements will be required.

a. First there is the requirement for additional tracking stations to support these systems. Their exact number and location should be determined by the United States Air Force. Until additional stations are added to the existing network there are restrictions in the system that seriously limit operational capabilities. Additional stations would:

(1) Increase the ability to obtain accurate tracking data required to predict ephemeris location within the prescribed accuracies demanded by the sophisticated camera systems of the LANYARD variety.

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(2) Reduce the number of passes making up a bundle; those passes during which communications between the tracking station and vehicle are unobtainable due to the limited communication range of existing stations, thereby increasing operational capability.

(3) Allow re-activation of the orbiting "J" package at stations other than the New Boston Station. Several passes over the USSR and China will be lost each mission if this restriction cannot be overcome.

b. Second, there is the requirement to develop either a method of delaying the launch of Thrust Augmented THOR vehicles for weather or developing a method of placing the "J" system in an inactive orbit until forecast weather over high priority targets improves to a category sufficient to justify camera operations.

c. Third, there is the requirement to develop procedures whereby two "J" vehicles can be in orbit at the same time. One system would be in an active orbit, the other in an inactive orbit. This would provide the nation with a quick reaction capability not available if recovery of one mission is required prior to the launch of the second mission.

4. To best serve the national interest, the scheduling of photographic reconnaissance satellite missions must be given increased flexibility. This is especially true after a system has been declared operational. It may be necessary to increase the number of launchings in periods of national tensions or if mishaps cause long gaps in successful recoveries. For these reasons a system should be available on a standby basis to launch as required.

5. Project CORONA and ELINT/SIGINT Satellites can make great contributions to the nation's Emergency War Plan. The CORONA Project should provide a reliable means of obtaining Bomb Damage Assessment photography on a timely basis. There are presently developed operational procedures that can meet this requirement if the responsibility is extended to this organization.

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6. It was anticipated the Universal Control System requested in June 1962 would be available for the LANYARD and "J" systems. For unknown reasons development of this item has not been accomplished. The increased operational flexibility a system of this type would provide is mandatory if national intelligence requirements are to be obtained with minimum delay. It is therefore recommended immediate action be initiated to obtain this capability as soon as possible.

7. The role Electronic Data Processing (EDP) will play in future satellite operations is dependent upon the place satellites have on the spectrum of reconnaissance capabilities. As more complicated systems are developed, requiring on-orbit programming, the importance of EDP grows to where it commands a mandatory position. However, there are inherent security weaknesses in an on-orbit loading system because of the communications requirements between the control center and the tracking station.

8. Before any new systems are developed the most logical approach to follow would be to establish photographic requirements and mission capabilities. The necessary hardware and control systems to satisfy the assigned mission for a particular vehicle and camera system should then be developed. This seems to be in reverse of our present method in which cast-off equipment from defunct systems is salvaged and new systems developed without regard to the operational problems that are to be inherited when the system is declared operational.

9. There are several features that should be given consideration when designing future systems or when reviewing the requirements for EDP in satellite operations.

a. The first is the requirement for quick reaction. This can be accomplished by several means. One is to keep a vehicle in a state of readiness on the pad to be launched whenever operational requirements are satisfied.

b. The next requirement is for a daily recovery capability. This feature allows a quick evaluation of priority targeting which can be used to establish new priorities for targets to be covered and may confirm or deny recoverage requirements of results just obtained.

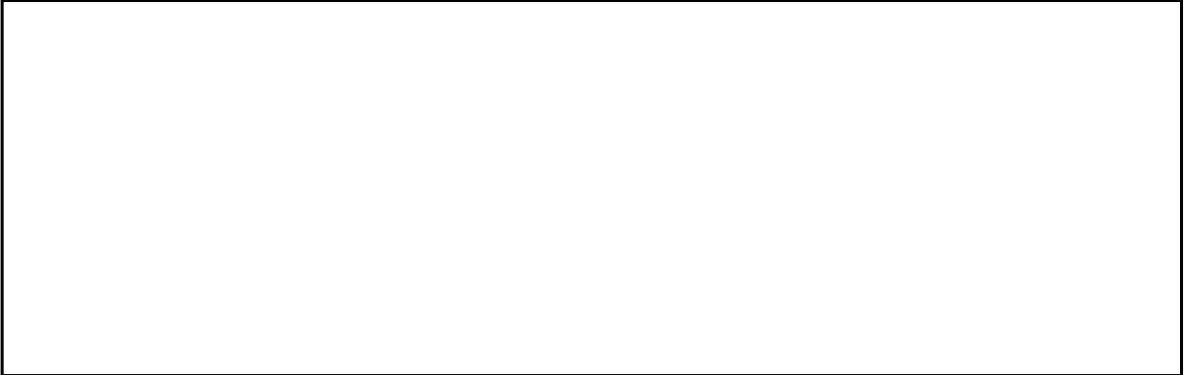
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c. Either of the above capabilities could require the use of EDP to predict future operations rather than real time requirements. The more sophisticated the operational system becomes the greater the requirement for EDP. Only through advanced computer programs can complete command and control be maintained.



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11. Camera systems operated under the CORONA program are being operated as joint programs with other government agencies. For this reason it is difficult to clearly state all possible operational concepts. Many actions in these programs are dependent upon decisions made at very high government level and as a result it is impossible to predict future funding requirements, mission schedules or advance additional operational concepts.

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# CORONA/LANYARD (J) MISSION SCHEDULE

CY - 1963

AS OF 15 MARCH 1963

<u>MSN NBR</u>	<u>DATE</u>	<u>PAYLOAD</u>	<u>REMARKS</u>
9053	25 Mar*	CM-20	Non-TAT
8002	16 Apr	L-2	<div style="border: 1px solid black; width: 150px; height: 50px;"></div>
9054/P1	**22 Apr	CM-21	
9055	**22 Apr	A-8	
9056/P2	16 May	M-22	
1001	21 May	CJ-1	First "J"
8003	11 June	L-3	<div style="border: 1px solid black; width: 150px; height: 20px;"></div>
1002	25 June	CJ-2	
9057/A	June	A-9	Flight dependent USIB evaluation of degree of success achieved by MSN 9055
8004	July	L-4	<div style="border: 1px solid black; width: 150px; height: 30px;"></div>
1003	July	CJ-3	
1004	July	CJ-4	
8005	Aug	L-5	
1005	Aug	CJ-5	
1006	Sept	CJ-6	
1007	Sept	CJ-7	
1008	Oct	CJ-8	
1009	Nov	CJ-9	
1010	Dec	CJ-10	

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9000 Series - MURAL  
8000 Series - LANYARD  
1000 Series - "J"

\*Changed to 1 April as of 22 March.

\*\*Count both to R-19 and then decide which is launched.

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